

# ALGEBRA 2A REVIEW

$$1) 3x - 5 - (2x + 4)$$

$$3x - 5 - 2x - 4$$

$$= \boxed{x - 9}$$

$$2) 7x^2 + 3x + 8 - (3x^2 + 5x - 3)$$

$$7x^2 + 3x + 8 - 3x^2 - 5x + 3$$

$$\boxed{4x^2 - 2x + 11}$$

$$3) 8x^2 - 11x - (3x^2 + 5x)$$

$$8x^2 - 11x - 3x^2 - 5x$$

$$\boxed{5x^2 - 16x}$$

$$4) 4(c + 2b) - 3(2c + b)$$

$$4c + 8b - 6c - 3b$$

$$\boxed{-2c + 5b}$$

$$5) (x - 4y) - 3(-x + y) + 4(3x - 4y)$$

$$x - 4y + 3x - 3y + 12x - 16y$$

$$\boxed{16x - 23y}$$

$$6) P(x) = R(x) - C(x)$$

$$30x - (10x + 215)$$

$$30x - 10x - 215$$

$$\boxed{20x - 215}$$

$$7) \frac{-(-3) + \sqrt{(-3)^2 - 4(5)(-2)}}{2(5)} = \frac{3 + \sqrt{9 + 40}}{10} = \frac{3 + \sqrt{49}}{10} = \frac{3 + 7}{10} = \frac{10}{10} = \boxed{1}$$

$$8) \frac{-(-5) + \sqrt{(-5)^2 - 4(3)(-8)}}{2(3)} = \frac{5 + \sqrt{25 + 96}}{6} = \frac{5 + \sqrt{121}}{6} = \frac{5 + 11}{6} = \boxed{\frac{16}{6} = \frac{8}{3}}$$

$$9) I = \frac{V}{R} \cdot R$$

$$\frac{RI}{I} = \frac{V}{I}$$

$$\boxed{R = \frac{V}{I}}$$

$$10) 3x^2 + 7 = y \text{ for } x$$

$$\frac{3x^2}{3} = \frac{y - 7}{3}$$

$$x^2 = \frac{y - 7}{3}$$

$$x = \sqrt{\frac{y - 7}{3}}$$

$$11) \frac{PE}{mh} = \frac{mgh}{mh} \text{ for } g$$

$$\boxed{\frac{PE}{mh} = g}$$

$$12) \begin{array}{r} 2L + 2W = P \\ -2L \quad -2L \\ \hline \end{array} \text{ for } W$$

$$\frac{2W}{2} = \frac{P-2L}{2}$$

$$\boxed{W = \frac{P-2L}{2}}$$

$$13) \sqrt[5]{23^2} = 23^{2/5}$$

$$14) \frac{2}{2} \cdot \frac{X}{7} + \frac{7}{7} \cdot \frac{(X+3)}{2}$$

$$\frac{2X}{14} + \frac{7X+21}{14}$$

$$\boxed{\frac{9X+21}{14}}$$

$$15) (\sqrt[3]{X+4})^3 = 5^3$$

$$\begin{array}{r} X+4 = 125 \\ -4 \quad -4 \\ \hline \end{array}$$

$$\boxed{X = 121}$$

$$16) \begin{array}{r} X^4 - 6 = 10 \\ +6 \quad +6 \\ \hline \end{array}$$

$$\sqrt[4]{X^4} = \sqrt[4]{16}$$

$$\boxed{X = \pm 2}$$

$$17) \frac{16}{-8} = \frac{-8(y+3)}{-8}$$

$$\begin{array}{r} -2 = y + 3 \\ -3 \quad -3 \\ \hline \end{array}$$

$$\boxed{y = -5}$$

$$18) 2(x+7) = 3x-5$$

$$\begin{array}{r} 2x + 14 = 3x - 5 \\ -2x \quad -2x \\ \hline \end{array}$$

$$\begin{array}{r} 14 = x - 5 \\ +5 \quad +5 \\ \hline \end{array}$$

$$\boxed{19 = x}$$

$$19) A = (a+b)(a^2+3b)$$

$$= \boxed{a^3 + 3ab + a^2b + 3b^2}$$

$$20) \text{ A. NO}$$

$$\text{B. yes}$$

$$\text{C. Yes}$$

$$\text{D. NO}$$

$$21) f(x+3) = 12(x+3) - 5$$

$$= 12x + 36 - 5$$

$$= \boxed{12x + 31}$$

$$22) f(-2) = 3(-2)^2 + 6(-2) - 10$$

$$= 3(4) - 12 - 10$$

$$= 12 - 12 - 10 = \boxed{-10}$$

$$23) \text{ A. } (-\infty, 9)$$

$$\text{B. } [-2, \infty)$$

$$\text{C. } (3, \infty)$$

$$24) f(-1) = \frac{(-1)^2 - 5(-1) + 4}{-1 - 2} = \frac{1+5+4}{-3}$$

$$\boxed{= -\frac{10}{3}}$$

25) A.  $f(3) = 5$  (since the point  $(3, 5)$  is on the graph)

B.  $f(-5) = 3$  (since the point  $(-5, 3)$  is on the graph)

26)  $f(2) = 4$  since  $(2, 4)$  is on the  $f(x)$  line

$g(1) = 4$  since  $(1, 4)$  is on the  $g(x)$  line

27) A. D:  $(-\infty, \infty)$  B. D:  $\{-4, 1, 2, 6\}$  C. D:  $[-2, \infty)$   
R:  $[-3, \infty)$  R:  $\{-1, 8, 9, 14\}$  R:  $(-\infty, \infty)$

28) C (it's a radical function and the rest have  $x'$ )

29) A.  $y = x$  ↗

B.  $y = |x|$  ∨

C.  $y = x^2$  ∪

D.  $y = x^3$  ↗

E.  $y = \sqrt{x}$  ↗

F.  $y = \frac{1}{x}$  ↗

G.  $y = e^x$  ↗

H.  $y = \ln x$  ↗

I.  $y = \sin x$  ~~~~~

30) A.  $y = 3\sqrt{-(x+2)} - 1$   
vertical stretch, reflect over y, shift left, shift down

B.  $y = -\frac{1}{2}(x+6)^2 + 3$   
reflect over x, vertical shrink, shift left, shift up

C.  $y = \sin(4x) + 2$   
horizontal shrink, shift up

31) C. It shifts left not right.

32) A.  $(f+g)(x) = 6x - 3 + 2x^2 - 5x + 9 = \boxed{2x^2 + x + 6}$

B.  $(f-g)(x) = 6x - 3 - (2x^2 - 5x + 9)$

$6x - 3 - 2x^2 + 5x - 9 = \boxed{-2x^2 + 11x - 12}$

C.  $(h \cdot g)(x) = 5x(2x^2 - 5x + 9) = \boxed{10x^3 - 25x^2 + 45x}$

D.  $\left(\frac{g}{f}\right)(x) = \boxed{\frac{2x^2 - 5x + 9}{6x - 3}} \quad x \neq \frac{1}{2}$

$$33) A. h[f(x)] = 3(9x-4) = \boxed{27x-12}$$

$$B. f[h(x)] = 9(3x) - 4 = \boxed{27x-4}$$

$$C. f(h(-4)) \quad h(-4) = 3(-4) = -12$$

$$f(-12) = 9(-12) - 4 = \boxed{-112}$$

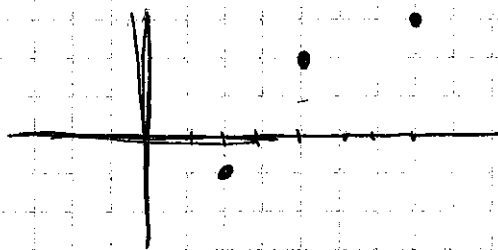
$$34) y = \frac{1}{4}x - \frac{3}{4}$$

$$x = \frac{1}{4}y - \frac{3}{4}$$

$$4(x + \frac{3}{4}) = \frac{1}{4}y$$

$$\boxed{4x + 3 = y = f^{-1}(x)}$$

$$35) f^{-1}(x) = \{(4, 2), (2, -1), (7, 3)\}$$



$$36) y = 3x + 6$$

$$x = \frac{y-6}{3}$$

$$\frac{x-6}{3} = \frac{y}{3}$$

$$\boxed{f^{-1}(x) = \frac{x-6}{3}}$$

$$37) y + 6 = 5x$$

$$\frac{x+6}{5} = \frac{y}{5}$$

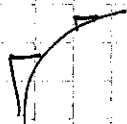
$$\boxed{f^{-1}(x) = \frac{x+6}{5}}$$

38) A. Yes - the functions are reflections of each other over the line  $y=x$

$$B. (f \circ g)(x) = 3(\frac{1}{3}x - 6) + 6$$

$$= x - 18 + 6 = x - 12 \neq x \rightarrow \text{No, not inverses}$$

39) C



40) Drive away from home at a constant speed, stop, speed up and then slow down

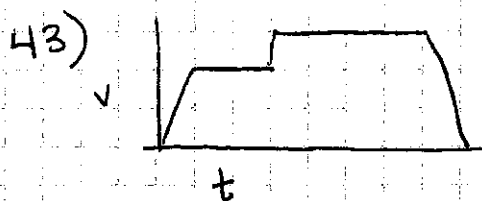
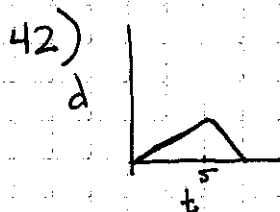
41) A. BC, DE, FG

B. AB, CD, GH

C. EF

D. DE

E. only at point A



44)  $d = s \cdot t$   $1 \text{ hr } \frac{20 \text{ min}}{60 \text{ min}} = 1.3 \text{ hrs}$

$d = 85(1.3) = \boxed{113.3 \text{ miles}}$

45)  $1 \text{ hr } \frac{45 \text{ min}}{60} = 1.75 \text{ hrs}$

$s = \frac{d}{t} = \frac{120}{1.75} \approx \boxed{68.6 \text{ mph}}$

46)  $t = \frac{d}{s} = \frac{42}{55} = .7636 \text{ hrs}$

$.7636 \left( \frac{60 \text{ min}}{1 \text{ hr}} \right) \approx \boxed{46 \text{ min}}$

47)  $m = 4$   $x = -5$   $y = 0$

$0 = 4(-5) + b$

$0 = -20 + b$

$+20 \quad +20$

$b = 20$

$\boxed{y = 4x + 20}$

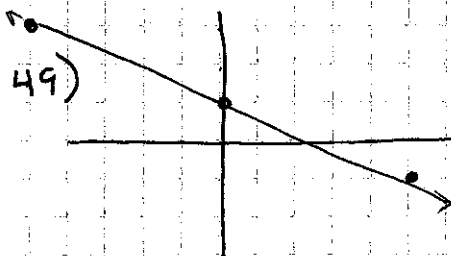
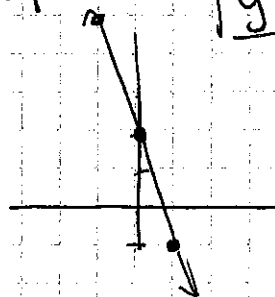
48)

	x	y
+1 <	-1	5
+1 <	0	2
	1	-1

$= b$

$m = \frac{-3}{1} = -3$

$\boxed{y = -3x + 2}$



50)  $b = 3x$  where  $x = \#$  white eggs

brown + white = total  
 $3x + x = 124$  C

51) A.  $f(x) = 2.5x - 25$

B.  $f(70) = 2.5(70) - 25 = \boxed{\$150}$

52)  $45 - 3 \text{ set-up} = 42 \text{ left for hourly rate}$   $\frac{\$42}{1 \text{ hr}} = \boxed{\$7 \text{ per hour}}$